

AVIATION WEEK

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MAR. 22, 1954

50 CENTS

**FIRST FULLY AUTOMATIC SYSTEM OF ICE DETECTION
AND ICE CONTROL FOR EVERY TYPE OF AIRCRAFT!**



GOODYEAR ANNOUNCES the Automatic Iceguard System*

GUARDIAN outpost of the new system is the ice-sensing probe accurately flashing its ice-warning and all-clear signals to the central control unit—the "brain" which directs the on-heat, off-heat action of Goodyear's famed Iceguards, on wing and empennage surfaces.

Precious seconds before a pilot's eye could detect ice or his finger flick a switch, the operation of the Automatic Iceguard System is in full swing.

A new era of safer automatic all-weather flying is introduced by this new electrothermal ice-protection system—developed in conjunction with the National Research Council of Canada—a Goodyear exclusive in the United States.

Proved and already standard equipment on Canada's Canuck CF100 fighters, the automatic detection and control unit is easily installed—and has a total weight of only 11 pounds, 10 ounces!

It is available for your aircraft now. **FOR COMPLETE DETAILS, WIRE OR WRITE:** Goodyear, Aviation Products Division, Akron 16, Ohio or Los Angeles 54, California.

Iceguard—T. H. The Goodyear Tire & Rubber Company, Akron, Ohio



**The ice-detection device can be used separately for warning of icing conditions.*

FACILITIES + ABILITIES = EXTRA *plus* IN PERFORMANCE

We think you'll like "THE GREATEST STORY EVER TOLD"—every Sunday—ABC Radio Network—THE GOODYEAR TELEVISION PLAYHOUSE—every other Sunday—NBC TV Network



**How you get 5-way service
on Sundstrand Drives...**



Founded in 1916, the Sundstrand Aircraft Service Corporation has developed a well-known technical organization with a steadily growing staff of competent, specialized engineers. These men, versed in both aircraft and engine requirements of modern aircraft, handle these two important functions dealing with the application, operation, and maintenance of Sundstrand Constant Speed Drives.

(1) Technical advice and assistance on initial installation. (2) Provision of structural materials for system fabrication. (3) Technical instructions of customer and

flight personnel. (4) Provision of spare parts between Sundstrand, the Air Force, BeAer, and engine and airframe manufacturers. (5) On-the-spot technical assistance to maintenance personnel.

Because of the rapidly increasing use of Sundstrand Constant Speed Drives, today you will find these important components in everything Air Force, Navy, and Air National, and plans of major airframe and engine manufacturers. Call on them—they represent complete Sundstrand coordination to the aviation industry.

CONSTANT SPEED DRIVES

- provide constant continuous power for a generator, through input speeds from 1000 rpm
- generators operate in parallel at constant 400 cycle frequency within $\pm 1\%$ (steady state condition)
- speeds are approximately ± 1 in 10 rated value; ± 2 in under steady state condition

SUNDSTRAND MACHINE TOOL CO
Aircraft Hydraulic Division, Rockford, Ill.
Western District Office, Hawthorne, Cal.

SUNDSTRAND

A name to remember in **AIRCRAFT HYDRAULICS**

RESEARCH BUREAU **B.F. Goodrich** FIRST IN RUBBER



Makes removing ice a snap

THE WINGS OF TWA's new Super Constellation, like the one in the top photo, are safely protected against ice with a new kind of B. F. Goodrich De-Icer. Dozens of small tubes running along the wings (see far bottom left photo) and de-icers (see bottom right photo) to snap off ice so the streamlines can carry it away.

The small tubes operate faster and with almost three times the air pressure than those used in ordinary wing-de-

icers. This quick action snaps ice off faster and cleaner.

Action reports the new B. F. Goodrich De-Icer less longer, too. That's because they're made on its and simply connected over the leading edges. No mechanical actuators, no cranking, no straining. The new BFG De-Icers are lighter and take up less space for plumbing.

The new De-Icer is used on all the new Super Constellations. It's one more development for the aviation industry

from B. F. Goodrich leader in rubber research and engineering. Other B. F. Goodrich aviation products: tires, wheels and brakes, landing rollers, nose wheel steering levers, Airseal, fuel valve indicator units, Rotors, hose and other accessories. The B. F. Goodrich Company, Akron, Ohio.

B.F. Goodrich
FIRST IN RUBBER

LOOK no ice!

It's protected with "warm-wing" controls manufactured by UCC*

NEITHER glare ice, rime nor frost can keep Boeing jet bombers from carrying out their missions.

A new thermal anti-icing control system, developed and manufactured by United Control Corporation, now in standard equipment on Boeing jets.

Wing, tail and engine-nose surfaces are kept at constant ice-proof temperature levels, regardless of ambient conditions, because this control system operates on air temperature.

By flush-mounting UCC sensing elements in the anti-iced stations, the skin of the aircraft becomes the source for control signals regulating heat delivery.

UCC's control system is...

● **AUTOMATIC**—Pilot has only to turn the system on.

● **LIGHT WEIGHT**—Controls required to suit on the wing of a jet bomber weigh less than five pounds.

● **SAFE**—Over heat danger is eliminated by continuous checks maintained on skin and structure temperatures.

● **EFFICIENT**—System operates on demand, so no fuel is wasted. No external equipment increases drag or reduces wing lift.

UCC thermal anti-icing controls can be adapted for use on all types of aircraft. If you are faced with an ice protection problem, take advantage of United Control Corporation's experience in producing light-power anti-icing controls.

UNITED CONTROL CORPORATION



(UCC also produces components for conditioning controls for aircraft. Write today for Tech and Sales kit.)

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Full-Range Flow Switches • Warm-Up Light Dimming Controls • Standard Regulators • Thermal Switches

NEWS DIGEST

Domestic

Link Aviation, Inc., will be sold to General Precision Equipment Corp., New York, under a performance purchase agreement signed by GPE with stockholders of the Buffalo, N. Y., producer of flight training devices. GPE officials say Link will continue to operate under its present management, but will be set up as a wholly owned subsidiary of the New York company.

Charles S. Thomas, Assistant Defense Secretary, assistant director of Lockheed Aircraft Corp. and World War II special consultant to the Assistant Secretary of Navy for Air, has been nominated as Secretary of the Navy. He would replace Robert B. Anderson, selected as Deputy Secretary of Defense (Aviation Week Mar. 15, p. 319). D. Walter Sear, assistant to the United Air Lines president, has been appointed Deputy Assistant Secretary for Public Affairs.

Striking engineers at Sperry Gyroscope Co. a Lake Success, N. Y., plant last week voted to end their 12-day wage without, striking for management's two-week-old offer of a two-year contract providing for a 5.5% package increase. The Engineers Assn. had demanded a 15% increase (Aviation Week Mar. 8, p. 7).

Earl Shick, head chairman of Shick Airways, is forming a new company at Westport-Salem, N. C., to handle its air transport management and licensing property plan versus other businesses in which he is interested. None of the new firm Shick Enterprises.

New solution to the heat burner problem, which has prevented widespread use of turbines (jet engines turbochargers) in engine equipment, has been announced by Sylvania Electric. The company says it has used operating temperatures from 700 to higher than 1000 by alloying silicon with germanium and germanium. Pure silicon is said to be experimental high-temperature turbines recently announced by Philips and Raytheon (Aviation Week Feb. 13, p. 36; Feb. 23, p. 72). Sylvania also reports a new technique for making germanium transition ceramic to surface stations, thereby eliminating major costs of labor.

New machine gun for aircraft and tanks, reported to be capable of detecting regular movement as small as 0.000001 of a degree, is being mass-produced by Minneapolis-Hausfeld.



New Plane for Small-Field Operation

The new Babcock SRX1 four-engine plane monoplane was shown during a flight test (top view), as serving as a prototype in the development of a "low-length take-off" plane to be powered by four Continental turbo-propellers geared to counter-rotating propellers and designed to require no ground run for takeoff. This short field performance is based on use of a long unsupporting high lift device, such as the extreme leading-edge slat and wing edge flaps shown in these two photos of the prototype. This prototype SRX1 (Project Skelton) is powered by a 240-hp. Continental and has achieved a maximum level top speed reported at 167 mph., maximum power speed of 14 mph. and has made takeoff and landing runs of 500 ft. during tests. The future turbo-propeller-powered SRX1 version has an estimated top speed of 135 mph., zero minimum speed and vertical takeoff and landing. Project Skelton is being handled by Robertson Development Corp., Clayton 5, Mo.

Regulator Co. Security wings recently was taken off the new integrating category, originally developed at Massachusetts Institute of Technology, which can measure both angular rate and displacement (Aviation Week Feb. 22, p. 77).

F. O. Conrad, president of Netherland Fuel Co., died Mar. 14 at West Hartford, Conn. He was 63.

Financial

United Aircraft Corp., East Hartford, Conn., announced its net income for 1955 of \$21,095,713 on sales of \$517,597,995. The net is equivalent to \$6.22 per common share after provision for the usual dividend of \$5 a share on preferred stock. Company's 1952 net was \$67,895,951, or \$5.18 a common share, net sales amounting to \$667,769,254.

Kellett Aircraft Corp., Camden, N. J., had a net income last year of \$206,694 from sales totaling \$1,583,878, compared with 1952's net of \$196,686 and \$1,750,161 in sales.

International

British Overseas Airways Corp. Constellation crashed during a landing last week at Singapore's Kallang Airport, somewhat off the runway and exploded, killing 11 of the 42 persons aboard. The U. S. Constellation was on a postal BOAC-Quebec Airways flight from Australia to London.

Canadian aircraft industry delivered equipment valued at \$10,205,000 during 1954 to NATO member Great Britain, France, Italy, Belgium and The Netherlands.

Last Harvard trainer grounded in Canada will roll off Canadian Car & Foundry's assembly line at Ft. William, Ont., next month. The Harvard is BCAF's version of North American Aviation's T-6.

Sounderwave Airlines System has purchased an \$200,000 light amphibious boat Can-Am Wright Corp., Wood-Ridge, N. J.

Twining Warns of Red Jet Striking Power

- **AF Chief of Staff says 137-wing force is the minimum air strength necessary to offset Russia's capabilities.**
- **Randford tells Senate subcommittee that U.S. emerges must not be diverted to a 'purely defensive system.'**

By Katherine Johnson

USAF Chief of Staff Gen Nathan Twining last week warned of Russia's steadily increasing air capability, citing intelligence reports that Tu-4 bomber force is being converted to more advanced, long-range bomber types.

Twining before the Senate Military Appropriations Subcommittee, Twining also warned.

• "We know that the Soviets are capable of producing quality aircraft. This is evidenced by our construction of MIG-15 fighters and by the very rapid conversion of the Soviet air force to modern combat types. These developments would not be possible in a technologically deficient aircraft industry."

• "The Soviets have built up a large force of light jet bombers whose range and performance capabilities put a strain there to meet needs in Europe and the Far East."

• "New completely equipped and equipped jet fighters (the Soviet air defense) present serious modern risks for existing and projected air force purposes. The introduction of modern fighter air forces into the Soviet system provides them an air defense in depth."

• "Main equipment in Russia's domestic ability to produce nuclear weapons. This ability, coupled with the delivery capabilities of the modern aircraft possible in quantity within the Soviet air force, creates the fact that the U.S. increase its emphasis on air preparedness."

• "The domination line between tactical and strategic air is fading. He reported. "Strategic and tactical forces are portable interchangeable, and provide the ultimate flexibility in offensive power."

• "The most significant development in the growth of our tactical potential is our ability to deliver nuclear weapons of all sizes on tactical targets. It is our objective to equip every offensive fighter and bomber element of our tactical forces to deliver nuclear

weapons. Both our strategic and tactical capabilities are adaptable in actual use in situations of limited hostilities and an general war."

Twining predicted that in any future war tactical forces "may well take and give the first air blows."

• The 137-wing program is a "maximum" requirement. "I would like to emphasize," Twining declared, "that this program reflects our intent to do the maximum air strength necessary to support our new national strategy."

One hundred thirty-seven wings is the maximum force which, maintained in immediate readiness and with emphasis on quality, can effectively discharge the tasks assigned the USAF.

The 137-wing force is adequate for the needs of national security as we know them now. Significant changes in the world situation may later require a revision of this strength.

• Transcending Counter Attack—Other witnesses before the group, headed by Michigan's Sen. Howard P. "Bud" Shuster, were Defense Secretary Charles E. Wilson, Adm. Arthur B. Radford, chairman of the Joint Chiefs of Staff, and the Secretaries and military chiefs of the three services.

Adm. Arthur Radford declared the U.S. strategy: Air Force and the Navy carrier strike force "are without peer in the world."

Warning against diverting "a drop

per cent" part of our energies and resources toward setting up a purely defensive system," he said. "We must not forget that the greatest single deterrent of a Soviet air attack against the U.S. is the tremendous counter attack, which the losses will immediately tell us."

USAF Secretary Harold Talbot said, "Autonomous—and especially the offensive power of the Strategic Air Command—is the keystone in our modern military strategy."

• No Sharp Change—Other views in debate.

• The "new look" reflects no sharp change in U.S. defense concept. Wilson called it "evolution, not revolution," and emphasized that the program was drawn to meet both of today's needs, as well as in general in atomic war. Twining pointed out that the program is "no radical departure."

• Republican Sen. Barry Goldwater, in a speech on the Senate floor, also counseled the Eisenhower Administration's role in strengthening support and placed substantial credit with former USAF Chief of Staff, Gen. Hoyt H. Vandenberg.

• Secretary Wilson's observations on the need for long-range defense costs within the ability of the U.S. economy to finance them was challenged in a report by the Joint Congressional Economic Committee, which has a majority of Republican members. The group, headed by Rep. James Wolcott, declared: "The economy is capable of meeting solely additional military expenditures if such expenditures are necessary for the military security."

"This is not a recommendation for more spending for national security purposes. It is rather an assertion that reductions in these programs which have been made and which are projected for the future should be justified upon their merits and not upon the premise that they are made necessary for economic reasons."

• The new defense program cuts the Army from 28 to 17 divisions; eliminates 49 ships from the fleet; and reduces the USAF program from 143 to 137 wings. Congressional members for additional funds for the Army and USAF, and possibly the Navy, are declining.

• Vandenberg's concept—in his Senate speech, Goldwater, who served as a World War II pilot in India, declared

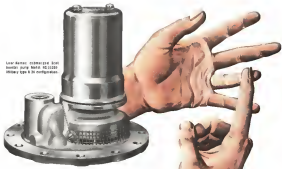


HAMILTON STANDARDS... leader for years in propeller design and production, is supplying other equipment for such outstanding new aircraft as the Lockheed C-130, U.S. Air Force turboprop transport.

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Propellers • Motors • Air Conditioning • Fuel Controls • Auxiliary Drives • Hydraulic Pumps



Low density, removable fuel booster pump Model 10-1125B, Model Type B in configuration.

Evaluate

the new LEAR-ROMECC submerged fuel booster pump

WHAT IT DOES: Supplies a total flow of up to 100 gpm, the LEAR-ROMECC pump is designed to provide the engine-driven fuel pump to function normally, for better starting of engine and better rate of climb, even with fuel boosters in tank surrounding the booster pump. Also provides boost for fuel lines.

HOW IT PERFORMS: Test reports demonstrate that the LEAR-ROMECC Model 10-1125B pump performs satisfactorily up to and including 25,000 feet. Configuration meets specifications 2800-P-1048 (15.5A-F). Other LEAR-ROMECC fuel booster pumps available with inlet pressure from up to 30,000 feet.

PRESENCE vs. HIGH GROUND: Unique design of LEAR-ROMECC fuel booster pump provides a good, flat base. A maximum of 8 to 10 psi is maintained under conditions of maximum fuel consumption of the engine, 7 to 8 psi at 100 gpm, 3 to 4 psi at 200 gpm. Can be modified to supply 30 gpm at 11 psi—meeting of military type B-6 pump.

SPECIAL DESIGN FEATURES: Two 1/2 in. ball bearings in place of the usual cast bearings, to prevent side run, even if the pump is accidentally allowed to run on an empty tank. Vertically mounted and easily submerged on the bottom of the fuel tank, with only electric leads

and plumbing connections exposed. Excellent "pass down" characteristics, even the fuel is lower with respect to the secondary float than other booster pumps. Will pump down to a fuel level of 1/2" above the mounting flange. Nozzle—only 27 lbs. Gross weight—12 to 14 pounds.

HOT AVAILABLE APPLICATIONS: Ideal for helicopters, fighters—multi-engine, transport and small commercial planes. Also highly suitable for jet engines equipped with ramjet and turbojet.

WHEN AVAILABLE: LEAR-ROMECC is producing these pumps now and has ample capacity to build them in quantity. Early delivery assured.

QUALITY LEAR-ROMECC engineering, research, manufacturing, production, and test facilities represent your investment in the Model 10-1125B—removable fuel booster pump is the Model 10-1125B fuel booster pump. Fast engineering and test results available upon request.



LEAR-ROMECC DIVISION
A Division of
LEAR INC.

EXECUTIVE OFFICES: LOS ANGELES, CALIFORNIA

7-5

that the use of this new lock is a revolutionary weapon, one that could be its strength through its use from abroad, as for instance a new concept in the field of an espionage. Gen. Vandenberg, who for five years was USAF Chief of Staff, held strongly to this concept, and all his efforts were directed to such an objective.

"The truth is that the new lock is the Air Force has been in process of formalizing since World War II. . . . To a great extent this new lock is mainly an acceptance of the old lock. The new lock came when the chief planning of Gen. Vandenberg and his staff is being first in an Air Force consisting of a carefully planned, closely integrated staff.

Air Force Chief of Staff, Gen. Matthew Ridgway, however, looked on the matter as "intercepting our more clearly in the ultimate key to victory."

"The need for a strong Army, and the importance of ground warfare," he said, "means in great part as they ever were. In fact, the advent of new weapons and the increased importance of support have not given new meaning and new scope to the dimensions of land warfare, without changing its nature and basic objectives."

Unobligated Airpower Funds: \$34 Billion

Air Force and Navy had \$7.6 billion in unobligated funds and \$26.2 billion in unobligated funds for aircraft and related procurement on hand at the beginning of February.

Aircraft procurement highlights: • Air Force had \$5.2 billion unobligated procurement funds on hand Feb. 1. Two principal reasons for this are: (1) the increasing and large-scale contract cancellations, and (2) the increasing and large-scale contract cancellations. In January, contract cancellations amounted to \$14 billion more than the contract cancellations. USAF's obligations from new money were only \$101 million for the first seven months of fiscal 1954, from July to February.

• Air Force expenditures for procurement, including of production deliveries, have been at a high rate. Expenditures for the first seven months of fiscal 1954 totaled more than \$1.9 billion and probably will pass the estimated total of \$6 billion to \$6.3 billion at the end of the year. USAF's unobligated balance on Feb. 1 was \$11.5 billion, sufficient to finance several years of high-level production.

• Navy's unobligated balance for aircraft procurement exceeded \$4 billion on Feb. 1. Obligation of new money over the July-February period totaled \$145 million, or nearly four times Navy's new money obligation for the same period.

• Navy expenditures for procurement

also was at a high rate, totaling \$1.5 billion for the first seven months of fiscal 1954. If this rate continues, ex-

penditures will exceed the expected \$10 billion for the first seven months of fiscal 1954. The unobligated balance on hand Feb. 1 is \$7.4 billion.

Production B-52A Rolls off Line

Seattle-B Boeing Airplane Co.'s first production B-52A rolled off the assembly line late last week, just a few days after the first eight jet intercontinental bombers ordered by the Air Force.

USAF never has revealed how many B-52As it has on order but one estimate places the number in the neighborhood of 250 to be produced here and at Boeing's Wichita, Kan., plant.

Air Force Secretary Harold E. Talbot and the number involved will be "sufficient to equip more than seven heavy bomber groups."

Boeing already holds contracts for more than 1,000 B-52D. Largest of these is believed to be for the B-52D. A number of the early production aircraft will be turned out to Boeing for further experimental testing and development.

State testing of the B-52 began early this month.

• Side-by-Side—Most apparent difference between production models and earlier prototypes is the side-by-side cockpit arrangement instead of the tandem seating of the experimental aircraft. Original tandem seating was at USAF request, but the change was

instigated because the first prototype had a serious problem with entry egress. Five or six, depending upon the nature. Although little has been said about the capabilities of the B-52, it is known that the Air Force expects the plane to carry more than a ton of bombs, to fly over 50,000 ft., and to have a range of 10,000 miles.

It will have the wing configuration for carrying paratrooper aircraft and will be incorporated in the B-52, Strategic Air Command's present heavy bomber. It also might be used for a wide variety of other aircraft similar to the Lockheed military version of the Super Constellation. This could mean a great variety of missions.

The B-52 also becomes not just a bomber but part of a "weapon system."

• Fuel Expenses—To produce the "weapon system," Boeing is expanding its fuel tank capacity at its facilities at Seattle and Wichita. At the Kansas plant, the company is tooling up for second-stage production that Secretary Talbot says will turn out 25 to 40% of the B-52s on order.

At Seattle, Boeing recently has completed a new electronic building, a new computer with a maximum 55 million flight test hours for the B-52 program, and has built a new computer building for B-52 maintenance.

Also scheduled are a truck, train and fueling facilities for the B-52s, as well as a new parking ramp.

Production of the huge bombers has required new manufacturing techniques and facilities. Assembly of the huge wing and fuselage requires enormous jigs, some of them of concrete. These are so large that they dictated the construction of a new jig building, with a 40-ft. ceiling; necessary in one section to provide clearance for some of the jigs.

At Moses Lake, Wash., a \$10-million B-52 supplemental test base is going up at Larson AFB. Production testing and certification of the B-52 will continue production long before the first flight of the prototype.

• First Flight—Like the Boeing B-29 Superfortress, the B-52 was ordered into production long before the first flight of the prototype.

NB-52 was rolled out of a Boeing hangar last week under tight security wraps on Nov. 29, 1953. But first flight of a B-52A was ordered into production long before the first flight of the prototype.

The NB-52 did not make its first flight until Oct. 2, 1952. Boeing explains that the reason also was calculated to get the NB-52, with its design changes, into the air as soon as possible.

• Flying—Boeing and performance details of the B-52 will be under review wraps. Wingspan is 135 ft., with a length of 145 ft. The wings are 135 ft. long and 45 ft. high. The wings are 135 ft. long and 45 ft. high. The wings are 135 ft. long and 45 ft. high.

• Fueling—Boeing and performance details of the B-52 will be under review wraps. Wingspan is 135 ft., with a length of 145 ft. The wings are 135 ft. long and 45 ft. high. The wings are 135 ft. long and 45 ft. high. The wings are 135 ft. long and 45 ft. high.

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CONVAIR XFY-1 is shown in horizontal flight attitude on its special mobile transporter vehicle. Note this wing.

Navy Takes Wraps off Convair and . . .



LOCKHEED pilot H. R. Sisson.



CONVAIR pilot James F. Coleman.

Official release of pictures and some details of the Navy's vertical-takeoff fighter prototypes (Aeronautics Week Feb. 22, p. 15) last week chronicled a series of events highlighting deep differences between the working press and Defense Department public relations policies.

Defense Department had set an official release date of 6 p.m. EST, Mar. 17, for pictures and a brief story on the Lockheed XFY-1 and the Convair XFY-3 prototypes. However, pictures of the Lockheed XFY-1 appeared in afternoon daily papers of Mar. 15, and Washington newsmen, disgusted with the long series of Defense Department fumbles on this project, followed with the complete VTO story.

Navy officials continued even in advance distribution of XFY-1 pictures by the manufacturers with previously locking the story. The pictures apparently first were published in Cleveland



LOCKHEED XFY-1 is hoisted at an angle on its mobile rig and is transporting and serving the Navy VTO fighter.

Lockheed Vertical-Takeoff Fighters

► **High-Ranking Tribune**—The Mar. 17 release date was originally set by the Defense Department to match the publication by *Cadence* magazine of a major article on the two Navy fighters accompanied by four color photo graphs.

Navy originally scheduled the VTO release for Jan. 15 but apparently changed its mind in order to offer the magazine an exclusive story under the byline of a high ranking member of the Navy's public relations. Photographs and a reporter of the magazine were given access to the VTO projects that were then classified "Secret" by the Navy. Representatives of other news media, who acquired similar access, were refused on the grounds of military security.

► **Protocols**—Aeronautics Week, along with other news media, officially protested the Navy's handling of the VTO story to the Defense Department (Aeronautics



LOCKHEED VTO is hoisted with special hoisting gear used for high-speed taxi tests.

Wash Feb 22, p. 15). Assistant Secretary of Defense Fred A. Seaton told Avianews Wenzel was opposed to the military service granting exclusive status to individual publications on new subjects.

However, the Collier's magazine project as VTO continued as a staff-written article without the Navy official's byline.

Although the color plates acquired for publication of the VTO pictures were being processed weeks in advance of the eventual publication date, other publications with similar advance engineering requirements for the VTO pictures were denied either the right to take their own pictures or access to official Navy photographs. VTO pictures were released officially by the Defense Department as soon as Mar. 15, about the same time photos of the XPV-1 actually were appearing in a Cleveland newspaper.

► **Many Delays**—Despite the Cleveland publication, Navy officials refused to authorize release of the VTO material before Mar. 17.

Washington newsmen defied the Navy's ruling as the grounds that no military security was involved in a national publication was associated with tracer photographs of the VTO fighters before the end of the week, and published both story and pictures of the Lockheed and Convair prototypes.

Navy officials told Avianews Wenzel they were "unhappy" the situation.

► **Vertical Takeoff, Landing**—Both the Convair and Lockheed prototypes are designed to take off vertically, swing into horizontal flight for normal fighter operations and then land vertically on a four-point tail landing gear with retracting wheels.

The landing is accomplished by a sweep to vertical position and slow descent while lowering the aircraft on its propellers. Landing is expected to be the most difficult phase of the operations.

The Air Force also has two VTO projects under development by Bell Aircraft Corp. at Buffalo (Avianews March 1, p. 11) and at Ryan Aeronautical at San Diego. The USAF projects use turbojets instead of turboprops.

► **Remarkable Claim**—In a four-page article supplementing the Defense Department's four-page photograph announcement, Lockheed quoted its engineering vice president, Hal L. Hubbard, as saying:

"The XPV-1 enters the war in the day when nearly all fighter planes will take off vertically. . . . The plane's thrust vectoring propeller will produce a thrust greater than the gross weight of the aircraft, thereby making possible vertical ascent and providing a considerable rate of climb before reaching level-off altitude."



LOCKHEED XPV-1 posed on its four-wheel landing gear, ready for vertical



LOCKHEED PILOT Sidney Strickland hoisted to get to cockpit of vertical XPV-1



CONVAIR XPV-1 sits on landing gear, with pilot's seat rotated forward for bleed-



CONVAIR VTO has engine intake ahead of wing. Belly door is for all control

Lockheed also says the XPV-1 can be landed in an area the size of a tennis court and has a level top speed "approximating 500 mph."

► **Similar Features**—The Convair and Lockheed projects follow the same general pattern. Points of similarity are:

• **Size and gross weight.** Both planes have about the same length, wingspan and gross weight. Wingspan is relatively short, fuselage length is considerably shorter than conventional jet fighters. Gross weight appears to be about half that of an F-10 type interceptor.

• **Power.** Both fighters use an Allison T40 turboprop developing 5,500 shp. The T40 uses two power sections geared to a single set of propellers.

► **Propulsion.** Like the XPV-1 and XPV-1 use Curtiss-Wright Turboelectric module controlling propellers with hollow steel, retractable blades.

• **Engine air intakes.** Both planes have engine air intakes located just aft of the propeller spinner on each side of the fuselage. All control air intakes are located on the belly—forward on the XPV-1 and under the fuselage on the XPV-1.

• **Landing gear.** The two fighters have a four-point crossbar arrangement of tail landing gear, using relatively small retracting wheels.

• **Rotating pilot seats.** Both planes have pivoted interior pilot seats, allowing the pilot to maintain the same relative position during vertical and horizontal flight of the aircraft.

• **Special mobile transport vehicles.** Lockheed and Convair designed and built special mobile ground handling rigs capable of transporting the fighters and raising and lowering them from horizontal to vertical attitudes.

• **External fuel tanks.** Both aircraft use external wingtip fuel tanks that are not retractable. Lockheed's wingtip tanks appear larger than Convair's, but the XPV-1 appears to have more fuselage fuel storage space available.

► **Differences**—Main points of difference are:

• **Wing plan.** Convair has continued its interest in the delta wing for high-speed performance, while Lockheed has retained the straight-wing, heavily tapered wing. Both wings are extremely thin, indicating a goal of high subsonic performance.

• **Controls.** Convair's delta wing requires the use of devices that run along the tail span. Lockheed uses elevators on all four of its tail fins. In both fighters, the two horizontal tail control surfaces will function as elevators and the two vertical surfaces as rudders. Convair has rudder controls in the two vertical fins of the XPV-1.

• **Engine exhaust.** Convair located the jet blower just aft of the delta wing's trailing edge, while Lockheed has lo-

AA Hits Nonsked's Shuttle Proposal

American Airlines last week attacked North American Airlines' proposal to operate a shuttle aircraft service between New York and Washington (Aviation Week Mar 15, p. 126) as "too superficial to merit serious consideration."

The scheduled airline, which already has a fourth service between New York and Washington, relied on Civil Aeronautics Board to discuss the airline's application.

"Political Gesture." "The proposal appears to be primarily a political ploy to divert attention from the main basic issues posed by North American's demand of low and varied regulatory policy," AA claimed in a petition to CAB. American said, "There is no factual showing that the [shuttle] experiment is feasible, an assertion which suggests that North American is not seriously seeking Board approval, but merely hopes to capitalize on the publicity involved."

Because North American's proposal "locks entry into a market already served by three certificated carriers, National, Eastern and American," it is without merit, American charged.

Monocoupe Prototype Logs 1,000 Hours

Monocoupe Aircraft & Engine Corp. has logged more than 1,000 hr on its prototype aircraft, four-place, twin engine, high-wing and soon will present its Model 2 for Civil Aeronautics Board certification. Robert C. Seiler, president, reports.

Prototype Monocoupe was flown in 1952. Flight tests, Seiler says, "concluded in 18 categories the carefully prepared wind-tunnel calculations and data."

Crew of the company has been to perfect a high performance aircraft with definite single-engine performance that could be installed in the \$20,000-\$35,000 field, he adds.

The plane is powered by two 150-hp Lycoming engines and is designed to cruise at 190 mph, sea level. Other specs: rate of climb 1,900 fpm, single engine at gross 615 fpm, ceiling 20,000 ft on two engines, 4,000 ft on one, full flap stall 35 mph; range 600 mi, unrefueled (18 mph, wind) 500 ft; wingspan 32 ft, length 21 ft, wing area 160 ft², aspect ratio 6.4; normal gross weight 2,600 lb, empty 1,300 lb.

Airborne Arctic Tests

Boeing Wind Chill, an arctic training maneuver involving 28 C-124s and

about 878 paratroopers, will be held this month at Thule AB, Greenland. The arctic force will simulate its attack on several installations to give it base personnel practice in defense tactics. It is the warhestern arctic maneuver yet held in U.S. armed forces.

Ryan Increases Pay Of Top Executives

Ryan Aeronautical Co., of San Diego, Calif., paid its president, T. Charles Ryan, \$48,174 in salary and \$4,436 in bonuses retroactive and similar payments during fiscal 1953 ended Oct. 31.

The company reports to Securities & Exchange Commission that other salaries paid were: C. C. Woodward, executive vice president, \$37,524 plus \$4,597 in deferred payments; and Ed Hoffman, \$146,255 plus \$24,753. Ryan's salary exceeded his 1952 pay by \$5,874 and Woodward's by \$5,324.

The firm had net income of \$1,675,440 Oct. 31, compared with \$375,179 the previous year. The 1953 backlog totaled \$48 million. It was \$67 million in 1952.

Ryan reports are to be confident the company will continue to maintain and improve the percentage of the total aeronautical market "despite indications that production rates will be in somewhat lower levels than in 1953."

Ryan was in building its 1,600-hr flight program, began plans for the XM-21 for Army Ordnance, the Q-2 for USAF and the Q-21A for the Navy. The firm employed 4,300 men and women at the end of the fiscal year.

Continental Reports Salaries, Projects

Continental Airlines & Engineering Corp., subsidiary of Continental Motors Corp., paid its president, Clarence Rouse, \$164,590 for fiscal 1953 ended Oct. 31.

Other salaries of more than \$25,000 reported to Securities & Exchange Commission: Arthur W. Wild, vice president, \$48,367; Lewis P. Kato, advisory consultant, \$48,241; H. M. Parker, treasurer, \$25,500; and Carl F. Burke, vice president, \$17,549.

Copter Tests. Continental made test flights of \$325,181 during the year, concentrating on production of its new helicopter 1953 model engine and its new helicopter parts for French helicopters for Navy.

Toward the end of the fiscal year, the firm began production of MA-1 trainer units involving Continental-Turbomeca Model 148 compound in operation to start the Pratt & Whitney Aircraft J57 engine.

J57 Developed. The company also is busy in the J57 turbojet engine, and the advanced version of the Pratt & Whitney. Continental has increased the engine's thrust beyond the 580 lb developed by the original Pratt model and inverted its fuel arrangement.

Fiscal 1953 to be produced will be used in the Air Force General T-37 jet trainer. The J59 also powers some models of the Ryan Firebird. Others are powered by the Pratt & Whitney J44.

Continental also is at work on a control system to be used in applying the J59 to C-76, which Flying Tiger Line has tested successfully.

Aviation CIR Joins Cornell-Guggenheim

American Crash Injury Research has joined Cornell-Guggenheim Aviation Safety Center as a unit of organizational changes designed to improve integration and coordination of ACIR's aviation activities.

ACIR, formerly at Cornell Medical College, has transferred its facilities to larger quarters in New York. The automobile safety research section of CIR still is at the Medical College and has taken away space formerly used by the aviation department.

Joanne Leshner, director of Flight Safety Foundation, also is director of Cornell-Guggenheim Aviation Safety Center. A Howard Hughes, formerly administrator of CIR's aviation research at Cornell Medical College, moves to automobile division of C-GASC and is chief of aviation crash injury research.

Ralph D. Hines, founder of Crash Injury Research in 1942, continues his efforts as director of automobile crash injury research at Cornell University Medical College and also will serve on an advisory committee with Dr. Wilson G. Smalley and Dr. Emerson Day to continue the aviation system's cooperation with Cornell's medical college.

Board Sets Cause In Nonsked Crash

Civil Aeronautics Board finds that the probable cause of a Miami Airlines DC-3 crash near Sellers, Fla., last Apr. 14, was improper failure of both engines "due to the lack of compliance with proper maintenance standards."

The Board determined that first one engine, then the other, progressively deteriorated while the flight was in its last north segment. The plane crashed in the Grande Mountains, killing four of its 22 passengers and the two pilots. A fifth passenger died later. The thousands and two relief pilots survived. The plane was dismantled, but there was no fire.

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Macwhyte "Hi-Fatigue" Aircraft Cable has maximum uniform strength and exceptional resistance to wear and bending fatigue. Because it is properly PRE-formed, it lays down with no tendency to twist or curl.

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NEARING COMPLETION, thing of Corsairs move along line with wings folded.



ACTION VIEW shows Corsair top detail.



WING PANEL held in place in sub-assembly shows being drilled. Leading edge section is drilled, upper part shown straightened, leading ribs.



WING-FUSELAGE JOINING operation shows wing ribs are being welded up to center section of fuselage body for landing. Within a wing rib's leading edge slot and an inlet passage behind (wing's) wing root area.

First Photos Show F7U-3 Production



NOSE SECTION shows canopy and some of plane's interior gear in need into position on belly band slugs for connection to fuselage center section (left). Canopy fuselage's second main portion forms shell for air inlet to fuelport.

Time first published pictures of Chance Vought Aircraft, Inc.'s F7U-3 Corsair production line show some of the major assembly places for this biplane, conventional fighter.

Other sections of the plane include a nose section (F7U-3N), photo or reconnaissance (F7U-3P) and ground attack (A7U-3) planes.

Now being delivered to the Navy for fleet operations, the F7U-3 is rated in the more-than-600 mph. class. It is powered by Westinghouse J46 turbojets fitted with afterburners.

To facilitate storage aboard carriers, the plane's nose wing panels fold along a hinge line, located just outboard of the two fins which tower above the central trailing edge.



LANDING GEAR is drilled into place in bolting to wing structure. This job is done while plane is in along the line.



TAIL CONE, lower than afterburner exhausts, has separating slugs at end. For the nose, nose wing tip at end of right, shows its afterburner exhaust, while wing tip at end's base is part of arrangement for cooling afterburner on the left.



FUSELAGE CENTER SECTION, looking forward, reveals large bays in which electrical wiring and fittings are being installed. An oil leakage system will attach to bulkhead framing workers.



TURBOJET WITH AFTERBURNER, one of two Westinghouse J46s powering the Corsair, is slid into place in fuselage. Afterburner thrust now is being built from KC-70 turbine.



EXHAUST OPENINGS gaps at end of exhausts as it is lifted into place for attachment to air ducting. Spinger between two exhaust openings has been considered for intake two from turbine. Fuel delivery line, cooling supply are seen at right.



LARGE FIN is suspended in slugs as it is fitted in place for connection to wing slab. Rudder is yet to be installed.

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pilot can negotiate the smoother course through and around storms.

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Navy Contracts

Contracts recently awarded to the
Navy's Aviation Supply Office, 700
Riverside Ave., Philadelphia 11, are:

**Aviation Supply Office, 700 W. 10th St.,
St. Louis 1, Mo.** (Navy contract)
Navy contract for 100,000 units of
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NOW... A FUEL AND OIL LINE THAT

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**Ampco Corp., 1200 North Main St.,
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USAF contract for 100,000 units of

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Here's the new Fluorflex-T hose re-
sistibly you've been hearing about—
an amazing hose development that sets a
new standard of service life.

This line has everything needed to last
the tough new jet engine plumbing prob-
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*DuPont trademark for its tetrafluoroethylene (TFE) fluoropolymer products from Fluorocarbon Division

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Why Aircraft Designers choose MICRO SWITCH Hermetically Sealed



MICRO SWITCH hermetically sealed switch (shown above) is positively sealed against leaks of any kind. It is impervious to dirt, gas or liquid to burn or enter the mechanism. Long life and trouble-free operation are assured.



View with turnable black mirrored showing location of sealed to glass seals for conductors to the switching chamber. (Note is for connection of air and moisture seal in sealed off after enclosure is filled with dry nitrogen.)



Cutaway view shows single pole, double-throw contact arrangement. Sealed portion indicates the sealed gas atmosphere. True hermetic seal is provided by glass to metal seal for conductors of points indicated by arrows.

MICRO SWITCH provides a true hermetic seal by glass to metal and metal to metal sealing

Hermetic sealing of MICRO SWITCH products is accomplished by the most modern methods to assure a true hermetic seal. This means glass to metal and metal to metal seals.

The sealing procedure assures that (1) the switch container is completely evacuated of all moisture and gases, (2) thoroughly tested for leaks of any kind and (3) filled with the exact amount of the proper gas for the most perfect switch operation.

MICRO SWITCH hermetically sealed switches have a d-c rating of 5 amperes resistive load, 3/4 amperes inductive load, and 35 amperes resistive load at 30 volts d-c. Ratings are the same at any altitude. Minimum contact

life on d-c current is 25,000 operations

The switch is designed to conform to Military Specification MIL-S-8743. It is interchangeable with MICRO SWITCH Type "B" gas plunger basic switches in most housings and actuators.

MICRO SWITCH engineering has pioneered in the development of many outstanding special switches to fill the rigid requirements of aircraft use. MICRO SWITCH engineers are specialists in solving aircraft switching problems. Their assistance is available without cost or obligation. You are invited to contact the nearest branch office for complete information on the MICRO SWITCH line.

MICRO SWITCH provides a complete line of extremely sensitive switches that include long action precision switches. Available in a wide variety of sizes, shapes, weights, actions and electrical characteristics for all types of electronic controls.

MICRO SWITCH

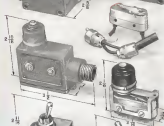
A DIVISION OF MONTGOMERY-KIMMEL REGULATOR COMPANY
PERDUE, ILLINOIS



**Switches for perfect operation
under all environmental conditions**



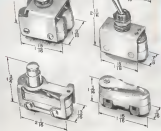
TOP—Six cast enclosures with condenser test down holes for insulating assembly of 3 hermetically sealed switches (left), two switches (center) and one switch (right) for rotary induction.



LEFT—Hermetically sealed switch with sealed leads for single pole, single throw operation. Also available, single pole, double throw.

(LEFT) Die cast enclosure with sealed plunger actuator and conduit connection. (RIGHT) Sealed plunger mechanism for panel sealing.

MICRO SWITCH provides wide variety of actuators and housings for hermetically sealed switches



Toggle switch assemblies for two hermetically sealed switches (left), for one switch (right).

(LEFT) Plunger actuator for use as push button or limit switch. (RIGHT) Standard hermetically sealed switch.



1,000 TUBES by manufacturers are not adequate to assure reliable product control to permit an accurate guided missile system.



MISSILE COMPUTER (such as NAA unit above) cannot tolerate failure of a single tube if it is to guide aerial weapons to desired target.

Missiles Impose New Hurdles for Tubes

Statistical sampling techniques have enabled electron tube manufacturers to raise the average quality of the tubes they ship. But the military cannot afford to play a statistical version of Russian Roulette in guided missiles where a single tube failure potentially means an aborted mission.

Isolating a human crew to take over when equipment fails or to repeat an

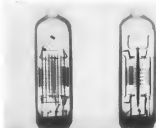
the malfunction after the mission, makes demand a very much higher degree of tube reliability than do piloted aircraft.

How to Get It Right, which two major manufacturers, North American Aviation and General Dynamics Aircraft, are taking to get more reliable tubes were described recently by R. A. Kirschstein, supervisor of electronics engineering at

NAVY's Downey plant, and R. E. Lauer, who is lead systems design engineer at CVA.

Kirschstein's paper was delivered before an Institute of Navigation meeting in Los Angeles. Lauer's paper was given at the South-Southwestern Institute of Radio Engineers conference in Tulsa.

There is an old axiom that you can-



X-RAY PHOTO, used by North American's technicians to spot a tube's hidden internal construction flaws, is one technique adopted by missile makers to weed out the potential failures. Another test used by NAA is to examine all tubes under a microscope.



MICROSCOPY only shows up a tube's (1) lateral support and (2) diagonal from an uncontrolled attempt to weld support.

"ANGELS 40!"

Production and delivery of the new higher powered, rocket-firing Mark 4, CF-100 to the Royal Canadian Air Force is underway in equip squadrons at additional bases around Canada's vast territorial borders.

With its radar tracking and fire control system, the Mark 4 goes even farther and exceeds the range of any other interceptor in the world. A CF-100 recently flew a 2100 mile R.C.A.F. non-stop mission in 3 hours and 50 minutes.

The role of this long-range, all-weather interceptor, powered by two Orenda jets, also designed and built by AVRO Canada, is the defense of North America against attack through the Arctic. However, because of its inherent versatility, the CF-100 could be readily adapted to a variety of tactical operations.

AIRCRAFT DIVISION
AVRO CANADA LIMITED
 MALTON, ONTARIO
 MEMBERS OF THE HAWKER SIDDELEY GROUP

"Angels 40!" in flight over sheltered waters "fast" in 40,000 feet in a hurry". R.C.A.F. pilots report fine CF-100's do their duty every weather, day or night.



CHANGE-VOUCHER was going to get more reliable tubes for its Republic guided missile.

not impact quality into a product, or in today's expression it, "No matter how many Fuchs you impact, you'll never find a Cadillac." However, since we ask manufacturers how no defect control over tube quality, they have no choice but to use inspection and test to weed out weak tubes.

Both NAA and CVA subject 100% of their missile tubes to inspection and test. North American goes one step further by employing x-ray, X-ray and polycrystalline inspection to discover internal construction flaws which would lead to failure in rugged missile environments.

► **Rejection Rates**—Each manufacturer has rejected more than 50,000 tubes to non-destructive electrical performance tests set forth in appropriate MIL (or JAN) specs. The CVA program has extended over three years, the NAA program over two.

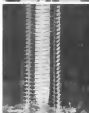
Electrical test rejection rates over these periods have averaged:
 • 5% at North America
 • 14% at Change Voucher

There are several explanations for CVA's higher rejection rate. Its program started earlier when there were few military (purchase) tubes available. Over the past nine months, 10,800 mil-type-approved tubes tested at CVA yielded a rejection rate of 9.4%, compared to the NAA figure. However, CVA is still forced to use some non-military-type tubes (in the lot of point-to-point components) and 7,150 of these tested over the same period netted a rejection rate of 15.9%, Lancia reported.

Another reason CVA's higher rejection rate. The company has continued to tighten test limits so that despite rejected tubes its rate has remained essentially constant over the three-year period. CVA is currently testing precision tubes to limits which are 1% tighter at both ends than those specified

in MIL-B-110 under which the tubes are produced. This is to compensate for weaknesses in CVA test equipment.

► **Graded for Use**—Tubes that survive North American's rigorous performance tests are then subjected to physical inspection checks intended to discover suspect faults. Some 60% of the org-



ONLY A FEW out grid wires on a missile tube were visible under a microscope (top) until the tube was moved, disclosing that half of the tube's grid wires had been cut

out 55,000 tubes passed all these tests and were "blue coded" indicating that they are suitable for missile use.

The 20% which passed the MIL-approved performance tests but which had construction flaws, are "yellow coded" for use in non-critical missile tests, such as in the lab for equipment inspection, where they will not encounter shock and vibration.

► **Under the Microscope**—When tube arrays are examined under a microscope, NAA finds many potential causes of failure. Klenhofer indicated. Photographs of some of the faults, viewed under a microscope, showed:
 • Physically sagged structural support for tube elements, apparently damaged during the welding process. The operator who assembled the tube had also made two attempts to weld supports to the tube elements, and a fragment of the first unsuccessful attempt was still attached. Klenhofer said that such a fragment is tolerated only if it appears to be firmly anchored and has adequate clearance from other elements (see p. 34).
 • Poor bond between tungsten heater wire and electrode to which it is welded, evidenced by a lack of visible dentation of wire being embedded in the electrode.
 • Damaged grid wires, cut during process of assembly. Klenhofer noted that only a couple of cut wires were visible on the particular tube shown, the rest being covered by the tube's anode. When the tube was disassembled, it was found that 20 out of 54 grid wires had been cut (see left). This and similar experiences have led North American to use X-ray inspection to supplement its visual microscopic test.

► **X-Ray Inspection**—NAA X-rays each of its tubes in two positions, one with the element supports parallel to the plane of the film, the other with them perpendicular to the film. (X-ray view of a subminiature tube are shown on p. 34). To obtain maximum radiographic definition and contrast, North American had to experiment with such factors as distance to the X-ray source, exposure, type of film and X-ray voltage. However, Klenhofer reported that with only 12 basic settings, NAA is able to accommodate a broadened differential in types of tubes, including solid, orientable and subminiature.

New inspection results in so many tube rejections on visual microscope procedures, Klenhofer reported, showed that it pays to use X-ray.

► **Polycrystalline Inspection**—Military can test upon check for stresses in the glass envelope on a sampling basis in which tube is alternately plunged into boiling and freezing water.

NAA finds this significant for 400% testing, so it has substituted the use of a polycrystalline which employs polished



Maxim jet chamber installation, Douglas Aircraft, Long Beach, Cal

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light to show some of high stress concentration. The technique is described in a Bell Telephone Labs paper released through the Radio-Electronics Television News Service on May 9, 1951 ("A Method for Measuring Strain in Side Walls of Glass Bulbs and Completed Tubes").

► **Feeling Safe to Use**—North American is advising the reason for stress tests on tubes wasn't led to pass electrical performance tests and the frequency of rejection for specific causes. The resulting information is then forwarded periodically to tube manufacturers and the Military. Kleinholder says.

In addition, the blue and yellow coated tubes are simulated so that if and when they fail, the type failure can be correlated with actual expectations data.

Tubes that fail in service are returned to an engineering group for an examination to determine cause. Object is to determine what additional design to look for during the initial inspection to prevent future failure.

► **Tubes Getting Better**—Thanks to an improved tube quality and the new pipe-type tubes, Kleinholder reports that reject rates are going down. During December, NAA tested 6,640 tubes, found 77% stainless (plus code) compared to the 68% average for the previous two years. In one batch of sub-man tubes, the failure rate was 37%, Kleinholder reports.

Kleinholder concludes that microscopic inspection, which is required in military acceptance tests for pressure subman tubes, should also be employed for resistance and axial tests, and that X-ray inspection for all types may be desirable.

► **Tube Aging at CVA**—Charles Vought is currently aging its high vacuum tubes for 100 hours, including burn-in time at the tube factory, at operating voltages that will meet in actual use.

CVA has found little difference in tube failure rates when tubes are aged in a longer aging period, but a significant difference if burn-in is shortened to 90 hours. However, with higher-quality tubes now coming along, Lester says that CVA hopes to shorten the aging period to 75 hours. Go tubes are given a 24-hour burn-in.

► **Good Lots and Bad**—CVA has found that individual batches of tubes will either have a rejection rate below 25% or above 25%. When rates are 25% or more, the tubes in that batch which do pass tests aren't necessarily close to the rejected edge, Lester says. At a 25% rate, CVA decided to scrap all tubes in a given lot when the rejection rate exceeded 30%, and with improved quality tubes has recently cut the figure to 20%.

To save time which would be wasted in testing all tubes in a bad lot, CVA uses a sampling plan to detect defects.

active tube batches, with a cutoff at 0.95, lower rejects. For example, in a 100-tube lot, if five of the first 10 tubes tested are rejected, the entire lot is automatically rejected. Lots with less than the critical percentage of rejects will be 100% tested, although the ratio for subsequently may be reduced, Lester says.

► **Music Manufacturer's Philosophy**—Lester understands quite a lot of music manufacturers when he said that "Charles Vought Aircraft conducts a tube-processing program, not to compete with the tube manufacturers, but because we have to in order to obtain the desired quality."

"The effectiveness of (that) program has been reflected in the high reliability of our Raytheon guided missile. If it were possible to obtain that reliability without our processing tubes, we would be happy to conclude the program today."

—Philip Klein

New Avionic Devices Are Put on Market

A variety of new components and devices suitable for avionic use, which have recently been announced, include:

► **Printed Circuit Capacitors**, "PC" series, for direct connection to printed circuit boards for maximum space economy, are available with up to 44 contacts and polarization provisions to assure proper connection. Now made are available with three different types of mounting: radial form. Electronic Sales Div., Bell-Avionics Corp., 4541 Northern Blvd., Long Island City, N. Y.

► **Lightweight Resistors**, Type "T", of the precision encapsulated wirewound type, are now available in MIL-M-VIA lug-type styles as well as several RUMS standard types, in commercial voltage ratings to 3.3 k for 125°C operation. Resistor bobbin and encapsulating materials are made of new resin, enabling units to withstand temperature cycling more severe than called out in MIL spec according to resistance. Bulletin L-10 gives added information. Radiovac Manufacturing Co., Colmar, Pa.

► **Molded Tubular Capacitors**, paper type, designed to withstand severe environmental conditions, can be operated at 150°C at rated voltage for 250 hr. at 50°C, manufacturers say. New units called "Thermopics" are available in standard sizes and ratings, described in Bulletin 106, available from Microwave Radio Corp., 1697 Flushing Ave., Brooklyn, N. Y.

► **High Temp Transistors**, designed for 175°C operation, are molded under type construction to provide up to 50% weight saving according to manufacturer.

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Caulfield-on-Hudson, New York



Engine turbine diagram



Valve body



For engine support ring



TOMORROW'S AIRCRAFT:

One step closer



Westinghouse—Rolls-Royce technical interchange advances jet development

Two world leaders in the manufacture of aviation gas turbines recently combined engineering forces through a ten-year technical cooperation agreement. As a result, Westinghouse and Rolls-Royce will exchange the wealth of design, development and production experience gained from their respective work on turbine-type power plants. This makes available an unprecedented amount of capability for jet engine development and provides the world's largest source of *technical interchange*.

Westinghouse—Rolls-Royce can now supply turbo-prop and jet power for commercial transport, military aircraft, guided missiles and the many flight concepts still on the design boards . . . giving America's airplane builders the advanced engine designs required for the successful conquest of supersonic flight.

WRITE FOR INFORMATION

Requests—when identified on company letterhead—are welcome. Requests for information on engine and development contracts may be addressed to: Aviation Gas Turbine Division, Westinghouse Electric Corporation, Lunar Beach P. O., Philadelphia 11, Pa. 19106.

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transformers are designed to MIL 127 specs, including Transducers Corp., 297 N. 7th St., Brooklyn 11, N.Y.

• Two Precision Fat, 7/8 in. dia. weighing only 4 or less grams, which is its construction, including gold after take-off break. New D 500 units are available with resistances up to 50,000 ohms, with linearity of $\pm 1\%$ up to 100-kHz. Minimum Resistance standard has temperature coefficient of 0.0003 parts/deg. C for values of 500 ohms or more. Unit may be operated at ambient temperatures of -57°F to 158°F . Manufacturer is Jet Electronics Inc., 53 Main Ave., Boston, Mass.

Two Firms to Build Airline Selcal Units

Matsuda and Bendix Radio have moved quickly to meet airline interest in Selcal, new selective calling system which enables a ground dispatcher to ring a beacon and flash light in cockpit of a specific airplane to which he wants to talk, relieving flight crew of continuously monitoring its receiver (Aviation Week News, p. 61).

Matsuda's Communications and Electronics Division, which calls its



Matsuda ground dispatcher's selective call unit, permitting ground operator to "talk" any individual aircraft to which he wants to talk.



Bendix airborne decoder flasher cockpit light and ring beacon when it is triggered.

equipment "Ditch-Call," also explained it has received Civil Aeronautics Administration approval of its system. Bendix says it will soon begin manufacturing its unit, the SEL-3 Selective Calling System.

• Matsuda. Publications calling on six Matsuda dispatcher's console (see photo) transmits two dual tone pulses per replica HF or VHF transmitter. More than 1,000 different combinations (coded) of tones are available, with each aircraft assigned an individual code. Dispatcher can change code of individual aircraft call units (see photo) at will.

The Matsuda airborne decoder weighs 13 lb., has dual channels for use with two receivers, or can be obtained with single channel. When its specific code is received, unit flashes cockpit light, rings beacon. Unit at Matsuda Selcal unit is now in use on Pan American's Fiji-New Zealand route, has CAA approval.

• Bendix Radio Selcal, both the airborne decoder (photo) and the associated dispatcher's console, are operationally similar to the Matsuda system.

Both are designed to the basic spec (characterized) drawn up by Airlines Electronic Engineering Committee of Aeronautical Radio, Inc. Airborne decoders cost approximately \$700 to \$800.

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More precise flowmeters are calibrated and checked on Cox Calibrating Stands of which the Type 309 is the latest, than on any other stand used by the automotive and aircraft industries. A precision weighing mechanism weighs the flow through the flowmeter being tested, ensuring precise calibration of the instrument. Precision Cox Calibrating Stands will accommodate single or multiple stage flowmeters of any make.

Other CRL Products

- Single and Multiple Stage Flowmeters
- Engine Testers
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- Solenoid Valve Equipment for Measuring Pressure and Volume
- Valve-to-Body and Sealing Equipment

When automotive and aircraft manufacturers first encountered the problem of determining in advance how certain engine accessories would perform under actual operating conditions, Commercial Research Laboratories engineers developed special test stands which would supply this information.

To test for optimum efficiency of jet fuel nozzles, for example, the nozzle is mounted in a Cox Nozzle Test Stand in which temperature and pressure are controlled and fuel is passed through the nozzle at the rate required. The fuel is continuously weighed by an electronic weighing device within the test stand and from this information the nozzle rate of flow is computed.

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"When you call in Parker for engine accessories, we can offer fast service on everything from propellers to shipwrecks," explains R. P. MacDonald, Parker sales engineer. He continues . . .

"Let me briefly describe these accessories for engine hot-air systems, from left to right: Our shutoff valve and pilot valve, used in remote cooling, are both extremely simple in design. The butterfly valve can operate at 100°F ambient and handle air up to 700°F.

"Shown on the right-hand page, our actuating and defusing valves help keep an engine's air intake section free from ice. Each can handle air up to 600°F. With modification, the defusing valve will carry air up to 900°F. The mouse-actuated shutoff valve assembly shown on the far right, is available with force, butterfly, shear-plate, or poppet construction.

"Parker has centralized all engine-accessory engineering and manufacturing into a single operating

division. Here you'll find engineers working to design accessories that offer not only more performance benefits but also cost savings. Because quality depends largely upon precision manufacturing, you'll also find we use the most advanced manufacturing techniques and many one-off-kind machines. And, the inspections and tests that each accessory must pass prove Parker customers get what they order.

"Having a specialized group of customers, we are able to gear these facilities to a faster, more streamlined way of doing business.

"Whether you are interested in engine accessories for hot-air systems or for fuel or hydraulic systems, why not call us in? We'll be glad to discuss your requirements and offer assistance."

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Inspections prove quality. Every accessory is 100% tested and inspected. Here's an optical comparator in use. We measure these customer layouts to develop test methods and results.



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New Accelerometer Balances G Torque

A tiny, sensitive generator sensitive to combinations, torque, produced by acceleration at a new sensor mechanism, are announced by Bendix Scientific Co. The construction enables the accelerometer to respond to fast signal changes.

Demon's new device comes in two models, one for linear and the other for angular acceleration. Error due to rotation is said to be 0.0003, output proportional to within 0.1%, and frequency response extends to 100 cps, or less if desired.

Additional details are presented in company's Bulletin DSA-1, Demco's address: 7529 Nevada St., Berkeley 33, Calif.



• **Bendix Airborne Radar Test-Bench** Radio has reportedly completed plans with a single U.S. international air review to test the prototype model of its X-band (3.2 cm) weather warning radar test station.

• **New UHF Transmuting Tubes**—RCA has announced two new, lightweight UHF "pencil" tubes suitable for use in airborne transmitters at altitudes up to 60,000 ft. The tubes are the first of the RCA pencil tubes to feature an internal cooling cathode, giving them a maximum plate dissipation of 15 watts. The new 6261, intended for use as an RF power amplifier in CW modulators has an amplification factor of 27. The 6264, intended primarily for use as a frequency multiplier, has a gain of 41.

• **Northwest Twin Remote VHF**—Northwest Coast Airlines is now operating remote VHF stations at its Chicago-Memphis route with stations at LaCrosse (Wis.) and Rochester (Minn.) and into its Minneapolis center by telephone line. This permits direct VHF contact throughout most of the Chicago-Memphis-Northwest route using Collins Radio RC-101 radios, which allow up to three trans-

mitted stations to be operated. Each of the three stations in this network operates at the same nominal frequency (151.9 mc) but with a 10 kc. separation to avoid interference.

• **Bendix Ships First DME-to-Bendix** Radio has delivered the first of its civil airborne DMEs and expects a backlog of \$250,000 in DME orders. One of the first Bendix sets will go into a plane owned by Frickland Travel Co. Bendix recently completed its first DME factory-training program.

• **MIDEMPE Sends Tests—Nav**, getting ready to service test a quantity of standard constructed with the new MIDEMPE ("Einkoten") technique.

• **New Kodomo Material—Stratified** adhesion which permit accurate transmission at any angle of incidence without changing polarization, and with an inherent change of direction, thickness is desired, can be made using a new self construction (type "K") developed by McMillan Laboratories, corporate reports. Type K construction is a sand with a thick low-dielectric skin with a thin high-dielectric core which McMillan says has proven extremely rugged. Company's address is 28 Oak Hill St., Ipswich, Mass.

• **Gen. Douglas To Speak—Lt. Gen. Lawrence G. Brown, USAF**, will deliver keynote address at the Symposium on Aerospace Protection of Aerospace Equipment, Apr. 29-30 at the Fairmont Hotel, San Francisco. The symposium, first of its kind on the West Coast, is sponsored jointly by Stanford Research Institute and USAF.

• **British Bore Doors Kalam—British** Ministry of Supply has ordered an undated number of the low-cost Dacor 424 window control and approach meter, for Royal Air Force use. (Airs. and Space Int., 11, p. 15). The one-foot dial for air transmittance version for quick setup in fixed airfields.

• **Philco's Conductor Sows—General** Electric will now assume production plans for miniature control conductors, designed to make growth with great current bonds. Plans will include housing of a super conductor manufacturer at a second source. Originally called "Superconductor" but later named "Pulse Wire Connection" GE spokesman says decision to go ahead resulted in just loan fund of equipment which followed American Wire's Nov. 10, 1952, they based on a paper delivered at the National Electronics Conference. Device will be marketed by company's Components Dept., Electronics Division, N.Y. —FK

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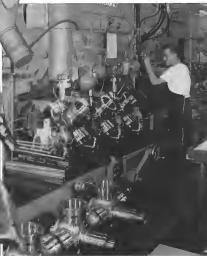
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USS Carilloy passes rigid

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THREE HIGH QUALITY aircraft propeller hubs are forged and machined from semi-finished Carilloy 4340. They meet extremely tough magnetic requirements.

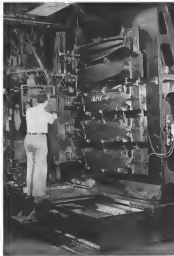
FOR BIG PROBLEMS: 2 large sections (a) are welded together to form one blade throat member. Throat area then ground and magnetized. Roller mill ground and magnetized again (b). H-R marker slugs (c) then are copper treated in throat members. Slugs are in heat treated and polished before final magnetic test and refinishing planing. Final magnetic testing occurs just before finished blade (d) are welded into transverse stress around to the final high speed planes.

A **W** important manufacturer of propellers for military aircraft has found that in stringent magnetic tests, USS Carilloy steel performs completely satisfactorily.

The high stresses in propeller blades and hubs naturally require extremely high quality steel. Accordingly, the U.S. Army and U.S. Navy have set up rigid quality specifications requiring that every heavily stressed part must be magnetized several times during its production.

With USS Carilloy 4340 electric furnace strength quality steel, the important manufacturer is able to count on the performance required for this severe application. The consistent high quality of USS Carilloy aircraft steel has meant greater savings to this customer through minimum magnetic rejections of costly fabricated parts.

USS Carilloy steels have established an enviable record for meeting the highest quality requirements. Therefore, when you need a standard AISI analysis or a special steel for an unusual application, it pays to call in a USS Service Metallurgist. He can help you solve any steel problem.



AFTER FORGING AND MACHINING, 750 lb. throat sections are tapered out on the Koller-Miller machine. Finished sections weigh about 150 lbs. USS Carilloy steel maintains a No. 1 quality position on these heavy-duty parts.

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Dallas Firm Expands Overhaul Facilities



OVERHAULED ENGINES await transfer via hoist which, mounted to adjacent test cells.



READY FOR ASSEMBLY, here are nearly 5,000 parts of a PW-6 BR11 in SAC shop.



BALANCING a propeller before



TORQUE TESTING a propeller

• Southwest Automotive Co. spends \$250,000 on engine-instrument shops, broadens distributor sales program.

Southwest Automotive Co. is going to set new company records in its largest production and overhaul facilities at Love Field, Dallas.

The firm, which spends through 225,000 sq. ft. in six buildings, plus 34 acres of concrete parking areas at Love Field, has recently completed a quarter-million-dollar expansion and improvement program.

• What's New—Here are some of the changes that the new building and equipment program have developed:

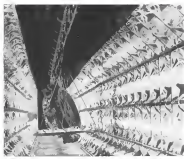
• **Enlarged lab.** SAC's instrument laboratory encompasses a more compact and has been completely re-equipped to handle all the latest type instruments, both electrical and vacuum. Planned by factory-trained specialists, the facility also engages in its specialty of engine-designing, and manufacturing executive aircraft instrument panels. Southwest worked closely with Edgipac Division of Bendix Aviation Corp., for whom SAC is a distributor in planning the new lab.

• **More production.** SAC has under take full-scale production in a 35,000 sq. ft. addition to its engine overhaul plant, which set a company record last year by turning out 2,185 completely rebuilt powerplants.

• **More test cells.** Through a lease arrangement with Bessell Aircraft, whose maintenance and overhaul headquarters are also based at Love Field, SAC has added a fifth engine test cell to its facilities. It will be used primarily on engines larger than the Pratt & Whitney Aircraft R35.

• **Broaden sales program.** SAC has broadened its distributor sales program which serves several commercial air lines and fixed base operators throughout the Southwest. Airline customers include Sky, Pan American, Frontier, Continental, TWA, Frontier, Continental, Krell, Trans-Devo and Delta C-130.

• **Other improvements** include provision of an air-conditioned lounge for customers, with a central office in case a customer needs an immediate during his stay in Dallas; enlarged flight operations room, with test facilities in a complete architectural plan, direct



INFRARED OVER heat-treated engine parts moved past 250 bolts by electrical conveyor.



PAINT DEPARTMENT, showing overhaul conveyor loading sofa and locker area at left.



INSTRUMENT SHOP has quick-disconnect wiring at benches to allow facility expansion.

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- All Capabilities in both hands—both

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For more information, write to: Sturtevant Torque Wrench Co., 100 West 17th St., New York 11, N.Y.

Sturtevant Torque Wrench Co. is a Division of The Sturtevant Company, Inc., 100 West 17th St., New York 11, N.Y.



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Cat"*

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line to Cornell AFB flight control center, local independence, radio, radio and information bureau, and private lounge, and office for Magnolia Petroleum Co. and Delta Oil Co. who partly operate a total of 15 aircraft based at Southview.

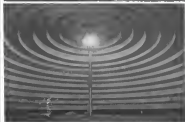
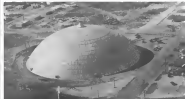
► **Engine Shop**—The new addition to the engine shop recently serviced by SAC allows a straight-line production flow of engines from final assembly to test in rooms of an enclosed warm and quiet. Included in the new equipment is a waterfall open, paint booth from which parts are removed through a 3 ft long induced haling oven.

The plant, which is an industrial representative for both Pratt & Whitney Aircraft and Wright Aeronautical Corp., includes among its customers

the Air Force, a manufacturer using SAC-related engines in its new aircraft, vocal airlines, and private owners all over America.

Tooling is ordered P&W B2000 is to be completed by summer.

► **Instrument Shop**—SAC's newly built instrument shop has been equipped with the most up-to-date testing and overhaul machines and instruments available, the company says. There are used to maintain and overhaul gyroscopes, bearings, and the most types of electrical instruments. The shop is completely air conditioned and includes such equipment as a gyro balance stand to calibrate vertical gyros used in Phoenix compass test stations, PB-10 autopilots, and gyro bearings, a Targyte transmitter, and



Prefabricated Dome Hangar?

This large steel and aluminum dome could be used to hangar almost a dozen DC-10 or four times that number of smaller aircraft, according to R. G. LeComme, Inc., which designed and built it. There are no interior supports in the structure. At under the 100 ft diameter building is 51 ft high. The hangar, at LeComme calls it, costs

over 70,000 sq ft of floor area and has a volume of close to 1.1 million cu ft. The company says it will cost, completely erected, for a cost of less than \$4 per square foot of floor space. The metal parts are shipped ready for erection, and a LeComme crew supervises construction by locally hired crew. Company's address is LeComme, Inc.



ENGINE-DRIVEN G-E ENERGIZER, 35-volt, 330/1000 amp, mounted on 4-wheel trailer compensates a completely self-contained power plant and weather proof housing. Shown here starting an F-84 jet.

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S-100-10
Portable Hydraulic Test Unit



S-100
Portable Hydraulic Test Unit

Sprague builds a complete line of hydraulic test machines ranging from the big test towers, Model S-100, hydraulic test towers, to various portable machines. Model S-100-10 is a rugged, heavy-duty machine built to take the roughest kind of airport service. Model S-100 is a small, responsive unit, designed for spot checks as well as system tests. General inquiries buy the S-100 by the dozens for sub-assembly testing. Write for bulletin.

in Polaris Power Via O Power, which provides a controllable electrical power source and measuring equipment.

The Via O Power unit supplies three phases, 115 v., 400 cycle power, three phases, 25 v., 400 cycle power, and single phase, 25 v., 400 cycle and variable v/c voltages.

Also used is a master directional inductive heater. A Heilmann unit is available for testing all types of T.P. (high-pot) capacitor dimensions and standard components.

Several more items machine tool equipment, parts inventories, sales and display centers and regional sales local quarters for Hamilton Division of Bendix, Wykeson Corp.

►Summary—SAC's other major activity at Love Field is that of fuel supplier. Last year it pumped some 3.5 million gal. of gasoline, which, the company says, is more than any comparable operation in the country handled.

The fiscal year ending May 31, SAC anticipates a gross sales volume of between five and six million dollars. Total profit adds up to \$1,250,000 and per share in the local area are about \$1 million. —G.L.C.

OFF THE LINE

Heilmann's Ethel auto-test denser was recently tested in the American Gas Association on a DC-6 at Los Angeles. The La Paz landing strip is 11,404 ft above sea level, 10,200 ft long, has a flexible surface covered with gravel and sand. Test results have not been announced.

Three new construction jobs are underway at Air Research Aviation Service Co., Los Angeles International Airport. Two of the aircraft are Cessna 340s (owned by the Team Co. and Union Carbide and Carbon Co.), which will also get Spore A-12 interceptors and engine parts jobs. The third plane is a Lockheed Lodestar (owned by Team Eastern Transportation Co.). Air Research recently completed installation of an A-12 intercepter, a new engine, and a new engine windmill in a 500, 500-hp engine in a DC-1.

Mooring, Marvill & Moore's Aircraft Products Division is putting up a new 50,000 sq. ft. plant in Danbury, Conn., where it is planned to employ 500 persons more than twice the company's present employment. Expansion was made necessary by growth of company's line of jet engine temperature controls, pressure switches for rocket and jet engine applications, altimeters control systems, electronic valves and thermocouples.

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Buckets by MISCO

for Curtiss-Wright
Turbo Compounds



This intricate bucket is an integral part of the power recovery units in the powerful Curtiss-Wright Turbo Compound Engine (shown above) which is now rated at 5700 h.p. for the U. S. Military Services and has been selected by 22 of the World's Leading Airlines for high-speed, long range transports.

Production of this complicated component clearly constitutes a notable MISCO achievement in practical engineering, metallurgical knowhow, and highly skilled techniques to meet the most exacting requirements.

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NEW AVIATION PRODUCTS

Belgian Firm Offers Crankshaft Grinder

A machine designed for vertical grinding of crankshafts, said to make measuring and control operations considerably easier, is being offered by a Belgian firm, J. DeBuyser, U. S. who say the equipment are being handled by the International Machinery Co.

Especially designed to grind crankshafts of DC-3, DC-4 and DC-6 aircraft, said to be essential for those the slide which permits travel and rotation of ground wheel holder.

Control knob, equipped with a counter measuring various 3004 is automatic, allows adjustment of grinding wheel in relation with the workpiece. Company notes that entire attachment can be set back to control surface just ground.

Blueprint of frame has revolving plate in constant use of machine motor, is fitted on sliding table and can be clamped by two bolts to insure correct positioning of workpiece. The workpiece is fixed on circular plate which rotates on sliding table. Type specific permits straightening of table and vertical column, against with frame, permits use of grinding stone and clock gauge for centering of crank pins and bearings.

Vertical movement is obtained from handwheel device which allows disengagement to obtain quick vertical travel of spindle. Overriding movement of wheelholder is regulated by two dog stops to prevent grinding of even smallest bearings.

Spindle is made of high tensile steel. Grinding level is said to be insured by means of a automatic screw. Grinding wheels are fixed by screws, pins and tapes, can be easily controlled by distance.

International Machinery Co., 3135 E. Jefferson, Detroit, Mich.

175-Ton Inverted Press For Extrusion and Bending

A 175-ton inverted hydraulic press for bending and extrusion processes on ferrous and non-ferrous parts, as well as for upsetting, drawing and forming operations that would require special auxiliary equipment on standard presses, is available from Walter P. Hall, Inc., Detroit.

The hydraulic control cylinder is in the base of the machine, reducing overall height, insuring that height limitations, lowering center of gravity and providing access at the top and sides for



measuring auxiliary hydraulic cylinder. Power is supplied by a separate 160 hp 4 hydraulic power pack with a 20-gal motor and a 30-gal, 1,800 psi pump.

Walter P. Hall, Inc., 22341 Telegraph Rd., Detroit 38, Mich.

Engine Pre-Heater Prevents Dry Starts

Dry starts, resulting in possible loss of several inches, are aptly prevented by a newly developed preheating which permits complete clearing and lubrication prior to starting.

Known as the Duxbury heater, it is used to operate without "post cooling" or consumption of the lubricating oil. Added feature is provision of oil seal when heater is not in use, ensuring maintenance of sufficient oil throughout.

Duxbury Aircraft Service, Inc., 1615 Northern Blvd., Westfield 17, N. Y.

ALSO ON THE MARKET

Deicing compound, developed for removing ice and frost from military aircraft, also has application in getting rid of thin icecrusts from coils of cooling equipment and other places where they form. It melts no soils or chemical fumes and is harmless to the skin, says the maker. Trade name is Fluor-Buster-De-Ice, Frigid, Inc., 15 East St., Staten Island 1, N. Y.

Advanced composite mount, designed to protect sensitive equipment from vibration and shock at aircraft, shipboard and industrial applications, employs inherent cushioning material of metal wire known as Met-L-Flex. Feature is close bearing action created by top and bottom Met-L-Flex buffer pads within housing, providing gradual reaction in stiffness, along with high damping for positive, regressive and radial motion and shock—Babcock Aviation, Inc., Industrial Division, Treston, N. J.

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Amplifier: Monostatic—100,000 gm cc/sec

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Rated Speed: $\pm 0.1^\circ$

Transfer Rate: Output Angle = 1 Input Angle

Characteristics: Zero Drift: 0.005 sec/deg

Input Motor Power: Requirement: 20 mva 400 cps. Drive phase 6-50 mva per phase

Weight: less than 3 lbs

Dimensions: Length 6", diameter 1.75"

Honeywell

Control Systems



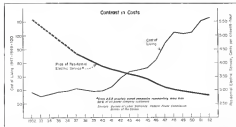
A 20-YEAR RECORD...

The Electric Power Companies' Case for Public Confidence

An economic study of the record of the investor-owned electric power companies of the United States over the past twenty years substantiates their claim to public confidence today. A key factor of this record is set forth by the chart in the middle of this page. That shows that while the cost of living as a whole has almost doubled, the average price of electric energy for residential use in the United States has been cut in half.

performance of these companies during World War II. J. A. Krug, Director of the Office of War Relocation, said, "Private has never been so little or so late." The same can be said for the entire period of the past twenty years.

To be ready with enough power—on time—the electric power companies have expended their production fourfold since 1923. This has required an investment of over \$17 billion in new



The average price of industrial and commercial power also are much lower than they were twenty years ago.

Such a study confirms the record on other key accomplishments of the electric power companies during the past two decades.

They have not failed, either in peace or war, to meet the nation's rapidly expanding electric power requirements in paying tribute to the

facilities. To raise the funds for this investment they have enlisted the participation of about 3 million direct stockholders. Through life insurance companies, banks and similar institutions, about 90 million Americans—more than half of the nation's total population—have become investors in electric power companies. By thus relying on private investment for their expansion, the power companies have provided their



They're pioneering jet-to-jet aerial refueling

Aerial refueling has been described in one of the most significant advances in recent aviation. It progressed rather surprisingly step forward when a specially fitted Boeing B-47 bomber made the world's first jet-to-jet transfer of fuel aloft—refueling line a jet fighter and later a companion B-47 Stratofreighter.

The modified Stratofreighter that acts as tanker in this pioneering jet program is a 10 mile a minute medium bomber fitted with fuel tanks, high pressure pumps and lines. Designated the KC-97, it is demonstrating the practicability of aerial refueling at the extreme altitudes and high speeds at which modern jet aircraft normally operate.

While Boeing's piston-powered KC-97,

the standard Air Force tanker, is obviously suited to the needs of today and the immediate future, team with the experimental KC-97 gives the flexibility of transferring fuel at jet speeds. This team also paves the way for the development of a jet-powered tanker large enough to carry ample cargo of fuel, and fast enough to deliver its aloft to jet fighters and jet bombers at the speeds and altitudes at which they function most efficiently.

Such a jet-powered tanker would be capable of accompanying jet aircraft on their ramraids and refueling them in one of several proved methods without the necessity of coming back to lower speeds and dropping down to lower altitudes.

Overcoming the crying need for an advanced jet transport, Boeing is constructing a prototype aircraft designed to be adaptable for either military or commercial use. The understanding in which Boeing is entering its own funds goes to show, one of the company's leadership in the field of large-scale jet aircraft, and one of its unsurpassed background of experience designing and building aerial tankers and aerial refueling equipment.

The integrity of Boeing design, its search and production of a machine that the young Boeing jet tanker transport—like the earlier Flying Fortress and Superfortress, and the new B-47 and B-52 jet bombers—will be in aircraft on which America will depend.

BOEING



This article is part of the Strategic Air Command strength and global alertness. It is based on such Boeing planes as the B-47, B-52, B-54 and others will take to show on the B-52.

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C. G. Jones, Salary Personnel Department

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canner later, by special arrangement granted at the suggestion of the President, 540W is authorized to operate not exceeding 12 additional flights per month carrying traffic on behalf of agencies of the U.S. government in overseas and foreign air transportation of cargo without limitation as to right of way or route.

As yet, CAB has not taken any action.

PAA Sets Up First Global Coach Service

First around-the-world through-air coach service will begin Apr. 1 when Pan American World Airways inaugurates new, low-cost tourist flights on its routes from San Francisco, Los Angeles, Portland and Seattle to Asia and the South Pacific.

Up to now, this was the only segment of PAA's globalizing route that did not have coach service. Upon reorganization of the new service, a passenger from any of these West Coast cities will be able to fly around the world, by the most direct route and with stopover privileges, for \$1,347.95 (first-class fare for the same route is \$1,794.55).

► **Coach/Class Class-Pan** American plans to combine both tourist and first-class aboard the same aircraft on the Pacific routes. A number of the airline's Boeing Stratocruisers have been modified specially for the job.

The combination-class Stratocruiser will be utilized on routes to Sydney, via the Fiji, and to Manila, via Guam. PAA also is converting Douglas DC-4s for combination service between the Fiji and Auckland, and from Manila

to Hong Kong, Saigon and Singapore. ► **Separate Flights**—On its route from the West Coast to Tokyo via Honolulu, PAA will carry first-class and tourist passengers on separate Stratocruisers. Waypoints from Tokyo to Hong Kong, Bangkok, India, the Near East, Europe and New York, combined service will be provided on DC-4s. All Strato cruises on the airline's Atlantic routes are first-class only.

From New York to the West Coast, round the world passengers travel by domestic airlines.

► **Modified Stratocruisers**—In modifying the Stratocruisers, PAA's Pacific-Alaska Division has allocated the forward portion of the aircraft for tourist class. Seating arrangement will be similar to that used on West Coast Honolulu tourist flights, with the exception of one-type reclining seats that are being installed.

All portion of the aircraft is reserved for first-class passengers, with a partition dividing the two sections.

► **First-Class Meals**—Tourist passengers will receive complimentary meals and are permitted free baggage storage up to 40 lb.

First-class passengers on these flights have separate dining room facilities, a baggage allowance of 66 lb., exclusive use of the lower-deck lounge, meals with champagne and dinner with plus Strip credit seats.

Beds will not be available at an additional charge.

Normally, the seating arrangement aboard the Stratocruiser will provide for 35 tourist and 24 first-class passengers. But PAA says that seats can be altered when traffic conditions warrant by removal of the partitions between the two sections.



British Design 'DC-3 Replacement'

Customary model of Aviation Trades (Kingsport, Eng., Accordant) proposed, designed by the firm as a DC-3 replacement. The Accordant is designed to seat 22-25 passengers (shown here is maximum seating not listed). Powerplants will be two Rolls-Royce Dart turboprops. Construction for

new model "jets" technique of covering the fuselage with metal sections using rivets and presetting, introduction of double curvature during assembly (Aviation Week Oct. 26, 1955, p. 36). An Accordant prototype is under construction. Gross weight will be 28,000 lb.

Air America Loses Name in New Ruling

American Airlines has won another victory for its name with Civil Aeronautics Board's order that Air America, Inc., and Air America Agency Corp. stop using the word "America."

Air America's attorney and last week the airline would probably file an appeal with CAB within 10 days.

The Board last November ordered North American Airlines to "cease and desist" from using "Americana."

The airline has appealed the ruling. In the Air America case, CAB Chairman Edward T. Stodola ruled that:

► Names "American" and "American Airlines" have acquired a secondary meaning in air transport identifying American Airlines to the public and had acquired such meaning prior to the date of incorporation of each of the respondents.

► Use of the name Air America implies an affiliation or subsidiary of American Airlines and has been used with intent to create that belief.

► Use of name by both carrier names constitutes unfair and deceptive to a substantial number of the public.

Stodola said Air America's use of the name was "misleading or deceptive practice" and "an unfair method of competition in air transportation."

He called Air America's practice because it prevented not to employ the "AA" shield in its newspaper advertising. Yet in 1955, he charged, it used that shield on the aircraft's registration.

"More addition of the public 'Air does not sufficiently distinguish the Air America name so as to prevent the likelihood of confusion with American,' he said.

"The public does little more than notice the color of the words 'American Airlines'."

The consumer's mental decision was brought about by American Airlines' complaint last April that Air America, by use of the similar name, caused the impression that the market rendered the service of a regularly scheduled airline.

Court Ruling Backs Higher Takeoff Fees

Trans World Airlines, hit by an adverse decision handed down by San Francisco's federal district court, will be required to pay takeoff fees based on aircraft weight when operating out of the city's municipal airport.

The court held that the Public Utilities Commission can fix fees for services use facilities, regardless of previous lease agreements. Up to now, TWA has been operating on fixed fees established in a 24-year lease granted in



ADRENALIN for JETS

Engineered to give jet turbines a final step to thousands of revolutions per minute, a push has created the production of America's most jet turbines and lighter aircraft.

How to avoid slow and sluggish jet engine start-up? How to prevent excessive stress and strain on the aircraft's own electrical energy system? How to prevent the production of undesirable voltages which are the cause of operation of delicate electronic instruments?

The Beech designed C-38 Generacraft today supplies just as important an answer for jets—as a self-propelled generating system it has the super power to whip thousands of jet engine horsepower into thrilling action within seconds!

Because of the Beechcraft produced C-38 Generacraft, jet aircraft can now have new uniforms with greater speed and efficiency. In addition to producing these important military training systems, Beech Aircraft is privileged to produce the C-38 Generacraft for the United States military aircraft services.

Beechcraft

Beech Aircraft Corporation, Wichita, Kansas, U.S.A.

Beach Model USAF C-24A • USAF C-23 • USAF C-40 • USAF C-41 • Model 33 Hercules • Model 32 Twin Beech • Model 18 Executive Twin-engine



Edwardian Aeronauts and the start of it all...

In two, four years after the Wright Brothers, men, a completely new page of world history by flying the first heavier than air machine, a young engineer now lives in the London Dockland Maritime Museum. He is the first ever all British Aeroplane. His name was A. V. Roe, his plane the Roe 1. Triplane. Such were the beginnings of Aeromobiles in engineering "first" in the world. Today the great first of A. V. Roe & Co. Limited

has another "first", no less important, no less important in its pioneering industry, the world's first 1000 mile bomber, the mighty Aero Valiant. The difference is that design in contrast completely re-built the world's new requirements for tomorrow's flight at high altitudes and long range... a wing that is highly swept back, very thin, with a large surface area in a jet's small space. With its ultra slender the Valiant is the world's most formidable bomber. It is now in super priority production for the Royal Air Force.

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MEMBER OF THE HAWKLEY HUBBARD GROUP, LONDON—AND WORLD LEADER IN AVIATION

1942. When PUC attempted to charge higher rates, the airline refused the bid.

► **18-Mile Increase**—PUC officials estimate the increase will result in an 18-million increase in the airport's revenues. Failing is that the case could set a precedent for municipalities around airports throughout the country.

"This is very definitely a major step in bringing the airport to the place where it can pay for itself," says San Francisco City Attorney Dan Hahn.

The event has ordered TWA to pay the increased rates retroactive to Dec. 31, 1950. In addition to TWA, the ruling also is applicable to Pan American World Airways, United Air Lines and other companies with contractual lease agreements.

► **Heavy Transporters**—The court decided that PUC's charter powers supersede such contracts, that the commission is a regulatory body with jurisdiction over the airport, a public utility, and that the city may provide utility service outside the city and county.

PUC's argument for higher rates was based on the increased size of aircraft since the original contracts were let. From 75,000 lb. to 100,000 lb. or more—increasing larger and heavier aircraft and two areas plus higher overall maintenance costs.

Airlines are expected to appeal the decision.

Lee Asks Reduction Of Aircraft Noise

A call for all major groups of aircraft owners, operators and pilots to intensify efforts toward reduction of airplane noise was issued by Civil Aeronautics Administrator Paul H. Lee.

In a widely distributed letter, Lee says, "Since spring weather and open windows will focus attention upon the matter of airplane noise. It seems timely, therefore, that all of us in aviation who have been working together for noise reduction seriously make efforts."

Lee asked pilots to:

- Operate aircraft with utmost consideration of persons on the ground
- Keep low-altitude flights over congested areas to the unavoidable minimum required for safe landings and takeoffs in accordance with sound procedure
- Carefully observe the regulations on giving an altitude of at least 1,500 ft above obstacles in congested areas, except when necessary for takeoffs or landings
- Select flight paths over the least congested areas whenever sound conditions permit
- Continue reduction in noise nuisance, achieved by carefully worked out procedures

Sharp Fare Cut

Trans World Airlines has asked Civil Aeronautics Board for permission to cut charges locally first on New York West Coast Super Constellation flights from \$85 to \$25.

E. O. Cooke, TWA vice president, says the proposed change is less than the cost of a Preliminary berth and would allow passengers in double berths to sleep on cross-country flights for \$12.50 per person.

Many for more rapid climb on takeoff.

"I am sure that the American people, knowing we are doing all in our power for their safety and comfort, will accept the reasonable measures of cost that airlines," Lee says.

Board Charges NAL Hid Cuban Interests

National Airlines was preparing an answer last week to what it termed "unsubstantiated" charges brought by Civil Aeronautics Board's Office of Compliance.

G. T. Bates, NAL president, has issued all the outstanding shares of stock of American International S. A., of Cuba since Oct. 3, 1946, without disclosing the fact to the Board.

• **National** failed to treat the open issue of American's direct interest operations in Havana and failed to keep the matter on its books with respect to such operations.

• **NAL** refused to give the Board's special inspectors and auditors access to American's books and records.

CAL's compliance office adds that the Board refers National to cease and desist from such violations.

American has maintained and operated National's sales office in Havana since Dec. 15, 1946. It sells transportation in National, performing all government clearance services and ground services.

UAL Reports Record Revenues, High Costs

Increasing profit margins "in which many costs improved (increased new ones)" resulted in United Air Lines earning \$1,611,438 last in 1953 than it did the previous year, UAL president W. A. Patterson reports.

Net income in 1953 was \$9,372,182, second highest in the company's 28 year history and exceeded only by the \$10,633,610 net for 1952.

Although some passengers and cargo

service carried by the airline in 1953 than in any other year, earnings declined because of:

- Introduction of Convair 440s, accompanied by relatively low load factors, particularly where the 44-seat transport replaced 21 seat DC-3s
- Low utilization in the initial period of Convair operation
- Stationary level of rates and fares despite cost increases
- Underestimated amount of diversion of line-haul traffic to lower fare coach service
- Increased depreciation charges
- Decline in the company's overall load factor due to expanded capacity and increased competition from other carriers

Operating revenues totaled \$177,907,280, a gain of 9% over the \$159,807,945 in 1952. Expenses were \$153,941,084, up 14% over the previous year's \$134,683,316.

The increase in expenses included increase of:

- \$5 million in wage rates
- \$1.1 million in gasoline costs
- \$5.2 million in depreciation

FTL, Slick Pilots Set Agreement Deadline

Pilots of Slick Airways and the Flying Tiger Line have set Apr. 15 as the deadline for agreement on integration of security into the dispute currently delaying merger of the two major airlines (Aeronautics News 33, p. 301).

Civil Aeronautics Board's direct operations of the merger Jan. 7 with the stipulation that the security problem must be resolved by both groups of pilots.

• **Air Line Pilots Assn.**, representing FTL pilots, is in dispute with the Civil In-Dependent Airways Pilot Assn.

• **Pittsburgh Courier**—CAL has denied Slick Pilots' position of Jan. 21 asking the Board to endorse integration of the security fight.

In considering Slick's petition, the Board found that "while it is true that our decision does not satisfy the procedure to be followed if the parties can not agree upon an arbitrator or the method or procedure for the arbitration, we do not consider that to be any defect in the conditions we have adopted."

Pilots are attempting to work out a formula. Mechanics of the two merging companies have a similar problem. However, it is not expected that differences will take as long to solve.

• **Major Terms**—Under the terms of the merger agreement, Flying Tiger will manage the running operations with FTL president Robert W. Prescott as chief executive of the new combined line. Officials expect the merger to be totally effective Apr. 15.

CAB ORDERS

(Feb 25 Mar 9)

DESIGNED

American Airlines report for certification at Kansas City, Mo., on its routes to one scheduled into the Denver service area being.

Application of Alaska J. Edwards and L. W. Amundson Service to the matter of suspension of the letter of authorization as a large regional airline.

Capital Airways application for an exemption from the Civil Aeronautics Act.

Delta-CGS Air Lines and Eastern Air Lines complaints regarding suspension and suspension of a rule proposed by Federal Aviation that would increase passenger time-out time at Boston, Fla., on basis in the Caribbean.

Proceeding involving Capital Airlines and Northeast Airlines Airlines proposals to provide excursion fare based on Saturday.

Consolidation of Flying Tiger Line and Sky Airways against proposed restrictions on inter-air carrier parts.

APPROVED

Amendment to the air transport agreement by and between certain scheduled airlines and the Railway Express Agency relating to extending the agreement to May 31.

Interim arrangements between Trans World Airlines and Japan Air Lines and various other airlines.

Interim arrangements between Delta-CGS Air Lines and American Airlines and various other airlines.

GRANTED

Passenger Group, Providence (Maine) chapter of commerce and the Providence Joint Port Area Joint to intervene in the proceedings of Northeast Airlines service to Providence.

Northeast Airlines request to use North Coast State Airport in leaving Providence, R. I.

Texas Eastern Airlines promises to again use flight between Dallas, Garyville, and New York, carrying passengers and baggage under a contract with the International Committee for European Migration.

Northwest Coast Airlines, Pan American World Airways, Trans World Airlines, United Air Lines and the Trans World General and change to structure in the Southwest and Western Airlines and Trans World Air Lines will use one.

Time World Airlines request for a listing on its proposed to provide service between Frankfurt, Germany and Zurich, Switzerland.

ORDERED

Investigation into the matter of national land and mail lines to Santo Domingo, as proposed by Pacific Airlines, Alaska Coastal Airlines, United Air Lines, Western Air Lines and West Coast Airlines.

Trans World Airways to show cause why the Board should not be in temporary mail.

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Eastern Pilots Fight Authority Restrictions

Eastern Air Lines pilots formerly elected to work to limit authority of the Civil Aeronautics Board to the Board's authority to restrict the operation of a pilot's aircraft requiring flight on grounds.

In a resolution distributed to Civil Aeronautics Board members, Civil Aeronautics Administrator Fred B. Lee said Eastern's management, the pilots and the new provision of the regulations held the pilot in command at the ship "responsible for the operation and safety of the airplane" and at the same time make it illegal for him to operate some of the devices and equipment necessary to duplicate this responsibility except in "emergency conditions."

Emergency Rule. The new provision states: "On flights requiring a flight engineer, at least one other flight crew member shall be suitably qualified, so that in the event of change of crew or emergency, emergency coverage can be provided for that function for the safe completion of the flight. A pilot need not hold a flight engineer certificate to function in the capacity of a flight engineer for emergency conditions only."

A second provision says: "No individual shall serve as the flight crew as a flight engineer unless he has in his personal possession and control, during a valid flight engineer certificate issued by the Administrator."

Eastern pilots say they are untrained and will not accept responsibility for the operation and safety of an airplane on less than they are fully authorized to operate and all components, devices and equipment on the airplane under any and all conditions "with no restrictions or limitations."

Action Asked. They add that it generally is recognized that it requires a greater degree of qualification to function adequately under emergency conditions than it does to function adequately under routine conditions, thereby making movement and unrestricted the provision, "A pilot need not hold a flight engineer certificate to function in the capacity of a flight engineer for emergency conditions only."

EAL's pilots are calling for immediate action by authorities to remove all restrictions on the right of operation by a pilot. Unless this is done, they charge, "Eastern Air Lines must provide an appropriate and appropriate group of pilots to meet the provisions of the

Civil Air Regulations as applicable to a flight engineer's certificate as a condition of continuing the operation of this equipment."

The new provision was to go into effect Oct. 1 but, because of various problems brought to bear, the Board has postponed them twice. CAB says it will not postpone the effective date again. Eastern pilots affected are those flying the airline's 55 Lockheed Constellation.

Senators Urge Action On Nonskeds, Locals

Senators Little Business Committee has called for federal action to improve the position of nonscheduled and local service airlines.

The committee consistently has criticized Civil Aeronautics Board for failure to act on behalf of airlines over a three-year period. This is the first time it has touched the problems of local service lines.

The committee declares in its report that "personal action is as positive" regarding nonskeds as it is for "it not to become most by the unsatisfactory service of the airlines concerned."

On local service lines, the committee observed "It has long been evident that they could not continue to move so large a subsidy from the taxpayer, nor do most of them work to do so. Instead, the efforts of the federal government to become self-sustaining airlines would be hampered by the policies of the federal government, which would give the most by their financial self-sufficiency."

CAB's asked to permit Pioneer Air

to replace DC-7s with 7-20s was cited as an example.

SHORTLINES

Aeroflot's by official, Marshal E. F. Sidorovskiy, as he took through Europe to compare airline passenger service. The Russian airline chief's itinerary was scheduled to visit him to Helsinki, Finland, and Stockholm, Sweden, Paris and several points in Switzerland. The Russians are reported to have criticized the West.

Allegory Airlines reports that over the last five years it has flown 369,492 passengers, since 1925, 125 million passengers and carried more than 170,000 tons of mail along with 390,000 hours of air transport, representing a perfect safety record in all operations.

British Overseas Airways Corp. round-the-world transoceanic flights on all British Commonwealth airlines will begin April 1. BOAC will begin weekly transoceanic service on the London-Singapore "Kingship" route, 3 in conjunction with Qantas Empire Airways.

Flying Tiger Line has concluded an exchange agreement with Japan Air Lines whereby Tiger flights at San Francisco will connect with the twice-weekly San Francisco-Tokyo schedules of JAL. Connections north of Tiger and JAL will require an additional routing over the system of the two carriers.

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Japan Air Lines reports advance route changes for its trans-Pacific tourist service, scheduled to begin April 1, have been as heavy as its scheduled extra flights for the month of April.

KLM Royal Dutch Airlines has elected a new sales office in San Francisco to cover the territory of northern California, Oregon, Washington, British Columbia and Hawaii.

National Airlines is moving the greater north-bound passenger flow in its history so far this year, with average passengerloads from its February up 16% over the same month last year and a 10% increase of 8% over January of this year.

Northeast Orient Airlines will inaugurate its DC-58 tourist service across U. S. to Hawaii, Alaska and the Orient April 1.

Pan American World Airways has added another tourist flight, Panamair, to its DC-58 tourist service across U. S. to Hawaii, Alaska and the Orient April 1.

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PAA Briefs Salesmen via TV

Using closed-circuit television, Pan American World Airways now presents a weekly sales briefing to its salesmen. The weekly sales briefing is held at 2,000 hours weekly in 20 different cities that 1954 business would be at least 10% higher than 1953's. Edwards and this was the only by which PAA is managing its sales. The weekly sales briefing is held at 2,000 hours weekly in 20 different cities that 1954 business would be at least 10% higher than 1953's.



How UAL Speeds Phone Reservations

United Air Lines phone reservations room has been moved from its old location in the New York City office to a new location in the New York City office. The new location is in the New York City office, which is a more convenient location for passengers.

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United Air Lines established a new record for revenue passenger miles flown in February, setting a record of 157,232,000 miles, 10% above the 1953 total.

The British Are Coming!

Where's Our Ocean Cargo Line?

The free members of Civil Aeronautics Board again have before them an opportunity to help reorganize American trans-Atlantic air cargo leadership.

A Board examiner has found that public convenience and necessity requires an all cargo service between our East Coast and western Europe.

The same examiner has found that an applicant, Seaboard & Western Airlines is most fit, willing and able to render such service, and issues a five-year certificate. Earlier, one of the Board's own counsel stated similar conclusions in a separate report.

Seaboard filed its original application for trans-Atlantic all-cargo routes in July 1947, almost seven years ago. The case has been limboing ever since.

There was one decision by CAB. It denied certification to Seaboard and other applicants. Seaboard and Trans-ocean Airlines then petitioned for reconsideration. The board did reject the case for obtaining in June 1952, but it permitted those other applicants to enter the proceeding, with up-to-date information and data.

Meanwhile, in the seven long years the U.S. has frittered away its trans-Atlantic airlight supremacy. Foreign-flag lines have been busy, and successful.

An editorial here July 7, 1952, told how successful. In testimony that CAB apparently ignored, Seaboard reported that in 1947 U.S. certified carriers lifted 72.5% of the total air cargo across the North Atlantic, while foreign lines carried 27.5%. In 1949, we flew 57.5%, the foreigners 42.5%. In 1950 it was 56.4% for us and 43.6% for foreign lines.

Last one day before Herbert Ryan's examiner report was served upon Seaboard's certification for all-cargo service, another Board examiner served a report recommending that the Board grant a British government-approved application filed by Aeromex, Ltd., for an unattached, all-cargo service between Great Britain and the U.S. Official Washington believes that under the government's agreement with England, the Board will be virtually compelled to grant Aeromex's certificate.

It seems inconceivable that the Board would grant a certificate to a foreign all-cargo air carrier before issuing the same right to an American independent, unaffiliated all-cargo company, whose approval has been withheld for so many years.

It also is inconceivable that the Board would grant such rights to a British company and deny them to an American firm. In such case, says Examiner Ryan, "The Board would have to assume the anomalous position of finding that public interest factors require a permit for a foreign air carrier while finding that similar conditions do not require a certificate for a domestic air carrier to provide a life service."

The examiner sets in the near future a trans-Atlantic airlight potential of about 60 to 65 million pounds a year, of which 35 to 40 million pounds per year would still remain to be developed by Seaboard after PAA, TWA and the other IATA members had stepped up their efforts to meet the increased competition.

The world's air cargo market is expanding. With one strict technical improvement and more efficient aircraft, we will win more and more freight from the ships.

"Confession of an all-cargo carrier would stabilize the position of all-cargo aircraft not only by a new carrier but also by existing carriers and would redound to the benefit of the national defense," the examiner says.

The Department of Defense in this proceeding strongly urged expansion of civilian air cargo service to Europe and the Middle East, without favoring any carrier or carrier, pointing out that existing U.S. carriers on foreign excursions had been unable to handle exponentially trans-Atlantic shipments of vital military materials.

Defense Department officials also cited the military value of the largest possible fleet, as being, of the most modern long-range aircraft, skilled personnel and facilities that can be converted quickly to war uses.

The Post of New York Authority argued an urgent need for Atlantic all-cargo services. It added that in 1949, 81% of the total scheduled trans-Atlantic all-cargo flights were operated by U.S. flag carriers, while in 1952 this dropped to 50%.

"From the long-range facts and all the evidence at hand, it must be concluded that the benefits which would accrue to the men and the national defense outweigh the adverse diversionary effects which Pan American and TWA would experience from the operation of an all-cargo trans-Atlantic service..." the examiner declared.

In determining which of the six all-cargo applicants was most fit, willing and able, the examiner stated equipment, financial ability to inaugurate the service, and past violations of the act. "Seaboard appears to be the most able of all the applicants to develop the trans-Atlantic air cargo potential," he decided.

Certainly, Seaboard has an outstanding record in commercial service, a reputation for quick and economical transportation for the military service, including the British and Korean airmen. It enjoys a reputation in air transportation circles as a clean, aggressive and efficient operation. It has never sought or obtained government subsidies. It has a proven knowledge of its airlight costs—an impossibility for combination passenger, freight express and mail carriers—and it has operated as black ink for much of its history, even without subsidy.

Seaboard has flown airlight across the Atlantic since May 1947. It is a going concern, as the examiner pointed out, with experienced personnel familiar with the operating and main problems to be encountered in developing the market. Its safety record is excellent. It has an order from Super Constellation coming about \$8 million, which it will begin receiving this year. Its business record to date has won it a \$1.4-million credit from the Chase National Bank. It possesses a fellowship at Columbia University for research in international air freight. It has fought hard to get what it has and it expects to remain a permanent member of the air transport industry.

We believe the examiner is right in urging that an American freight carrier be given a chance to show what it can do in this market for at least five years, without subsidy. This is free enterprise. We also believe that Seaboard is the airline to try it.

—Robert H. Wood

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